

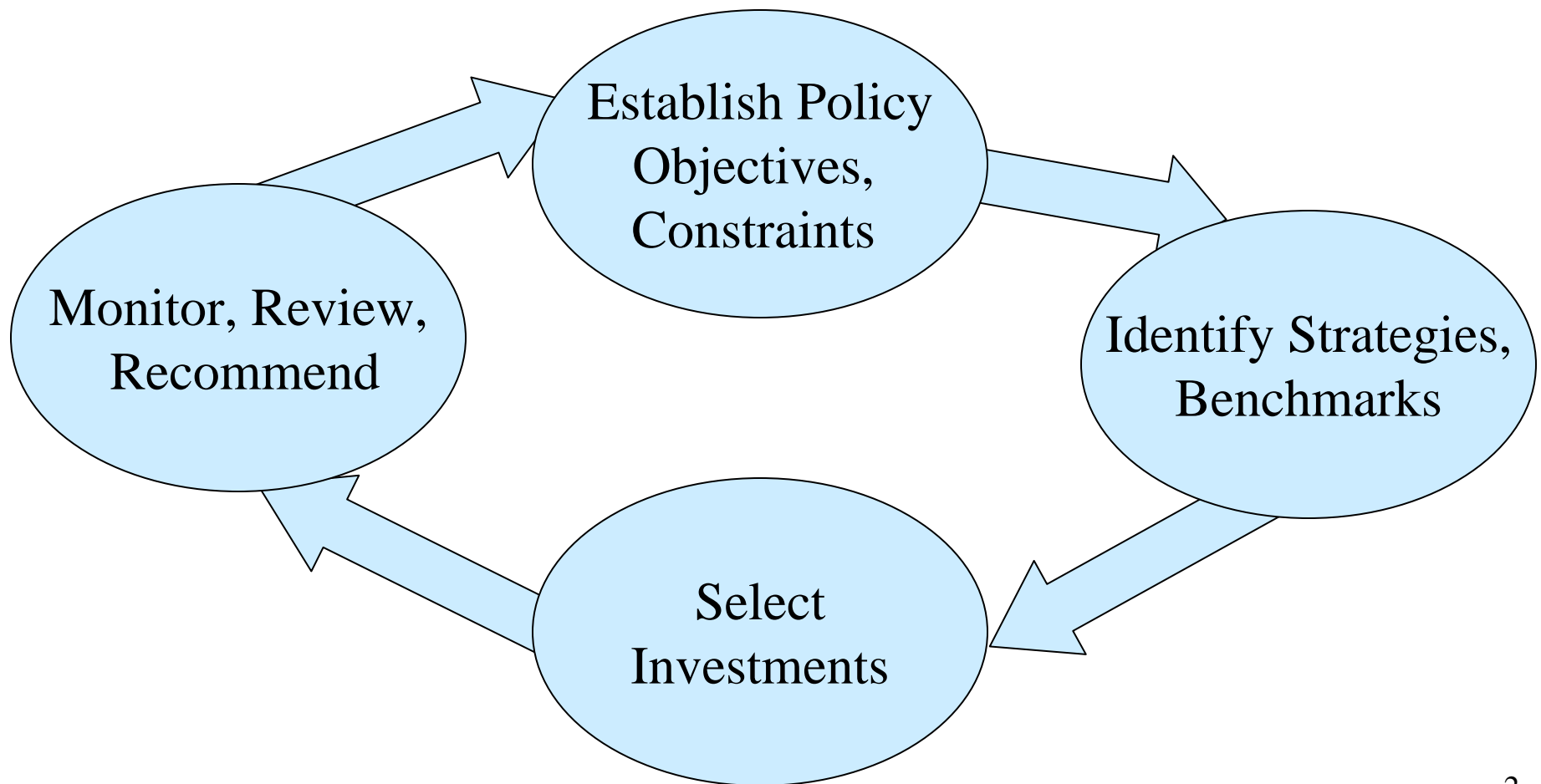
Investing for an Asset/Liability Matching Program

Presentation to Bond Buyer Conference

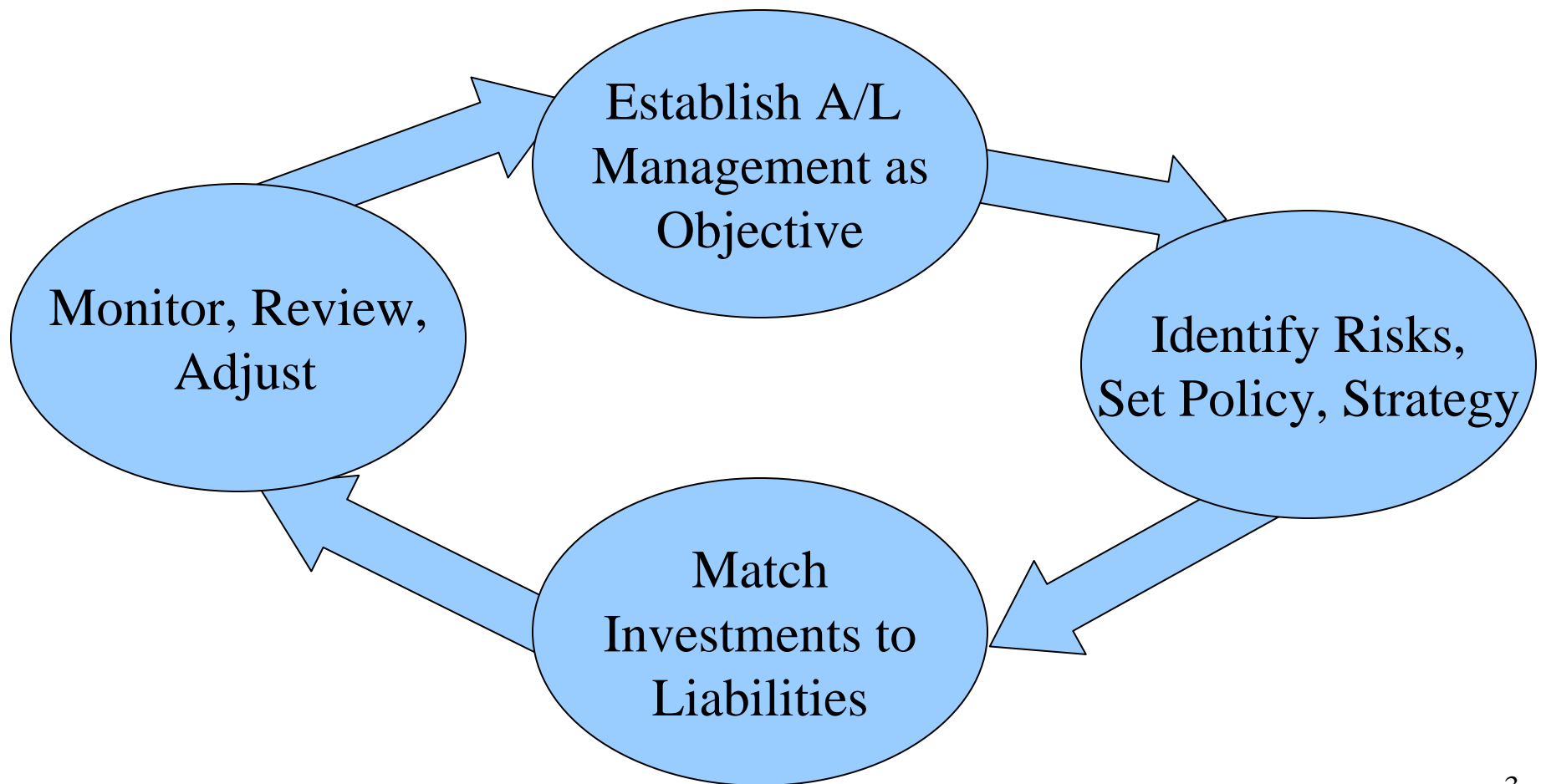
September 21, 2005

Kay Chandler, CFA

Managing the Investment Program



A/L Management Investment Program



Some Definitions

- **Dedicated Portfolio:** A portfolio with a structure designed to fund a schedule of liabilities from coupon and maturity payments and with the portfolio's value diminishing to zero upon payment of the last liability.*

*Source for definitions: Maginn & Tuttle *Managing Investment Portfolios A Dynamic Process*, 2nd Ed. 1990

Some Definitions

- **Cash flow Matching:** An immunization technique that matches interest payments and coupons with specific payments in a liability stream.*

*Source for definitions: Maginn & Tuttle *Managing Investment Portfolios A Dynamic Process*, 2nd Ed. 1990

Some Definitions

- **Immunization:** The process by which a fixed-income portfolio is created having an assured return for a specified time horizon irrespective of interest rate changes.*

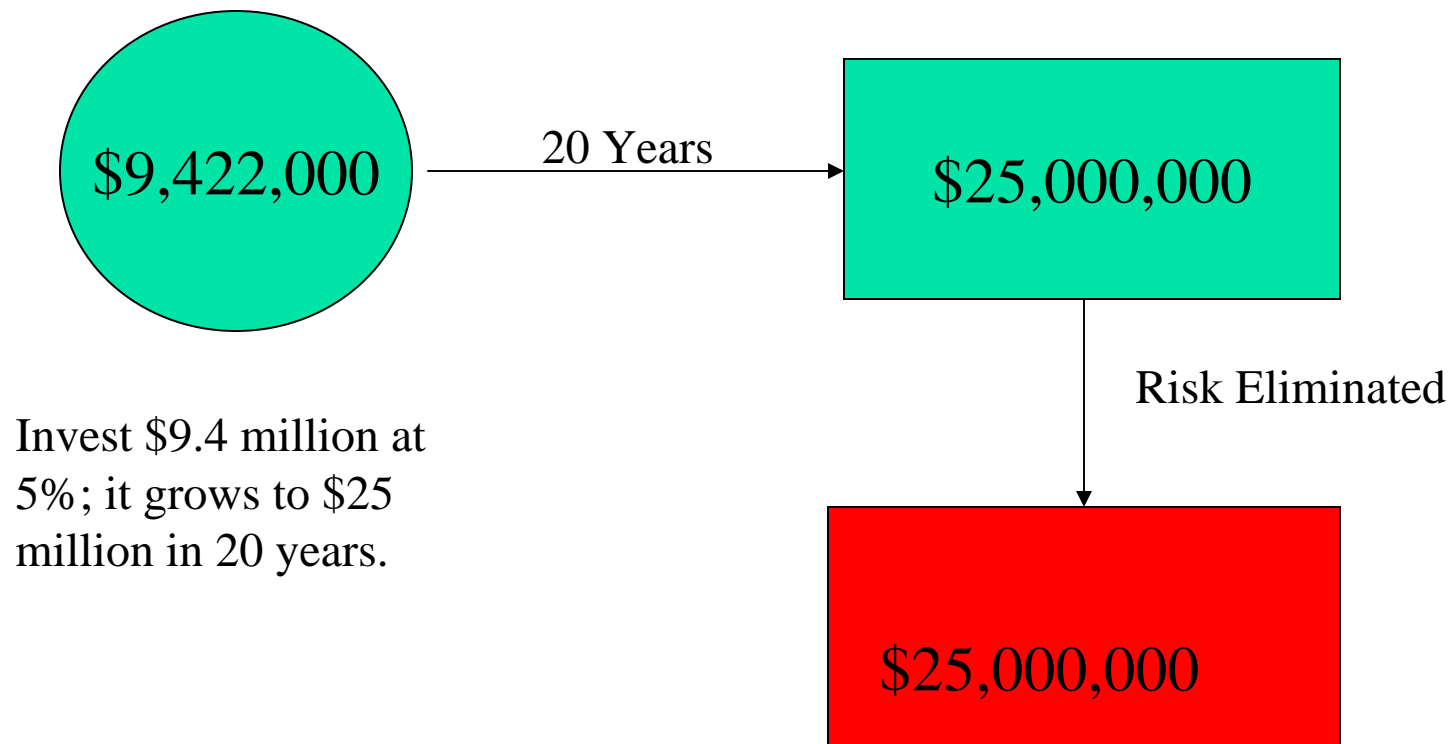
*Source for definitions: Maginn & Tuttle *Managing Investment Portfolios A Dynamic Process*, 2nd Ed. 1990

Applications for A/L Management

- Guaranteed Investment Contracts
- Funding of Benefit Liabilities such as Pensions and PEBTs
- Insurance, including self-insured liability and worker's compensation pools

A/L Matching—Single Liability

\$25 million payment due in 20 years

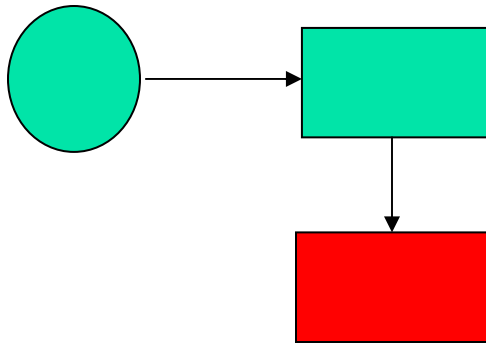


A/L Matching—Multiple Liabilities

Cash Flow Matching For a Superfund Settlement

11/15/2004	O&M Cost	Plant Cost	Total FV	PV @4.2%
11/15/2005	917,022		917,022	(880,060)
11/15/2006	1,691,967		1,691,967	(1,558,319)
11/15/2007	1,752,780		1,752,780	(1,549,260)
11/15/2008	2,057,555		2,057,555	(1,745,342)
11/15/2009	1,819,367		1,819,367	(1,481,091)
11/15/2010	1,918,488		1,918,488	(1,498,831)
11/15/2011	1,933,749	3,295,427	5,229,176	(3,920,660)
11/15/2012	1,971,845		1,971,845	(1,418,832)
11/15/2013	3,078,409		3,078,409	(2,835,247)
11/15/2014	2,102,089	3,405,928	5,508,017	(3,803,521)
11/15/2015	2,349,102		2,349,102	(1,556,771)
11/15/2016	2,201,657		2,201,657	(1,400,247)
11/15/2017	2,345,160		2,345,160	(1,431,396)
11/15/2018	2,720,156		2,720,156	(1,593,358)
11/15/2019	2,349,115		2,349,115	(1,320,554)
11/15/2020	3,493,937		3,493,937	(1,884,948)
11/15/2021	2,468,039		2,468,039	(1,277,817)
11/15/2022	2,559,558		2,559,558	(1,271,785)
11/15/2023	2,616,443	9,395,022	12,011,465	(5,727,657)
	42,346,438	16,096,377	58,442,815	(36,395,578)

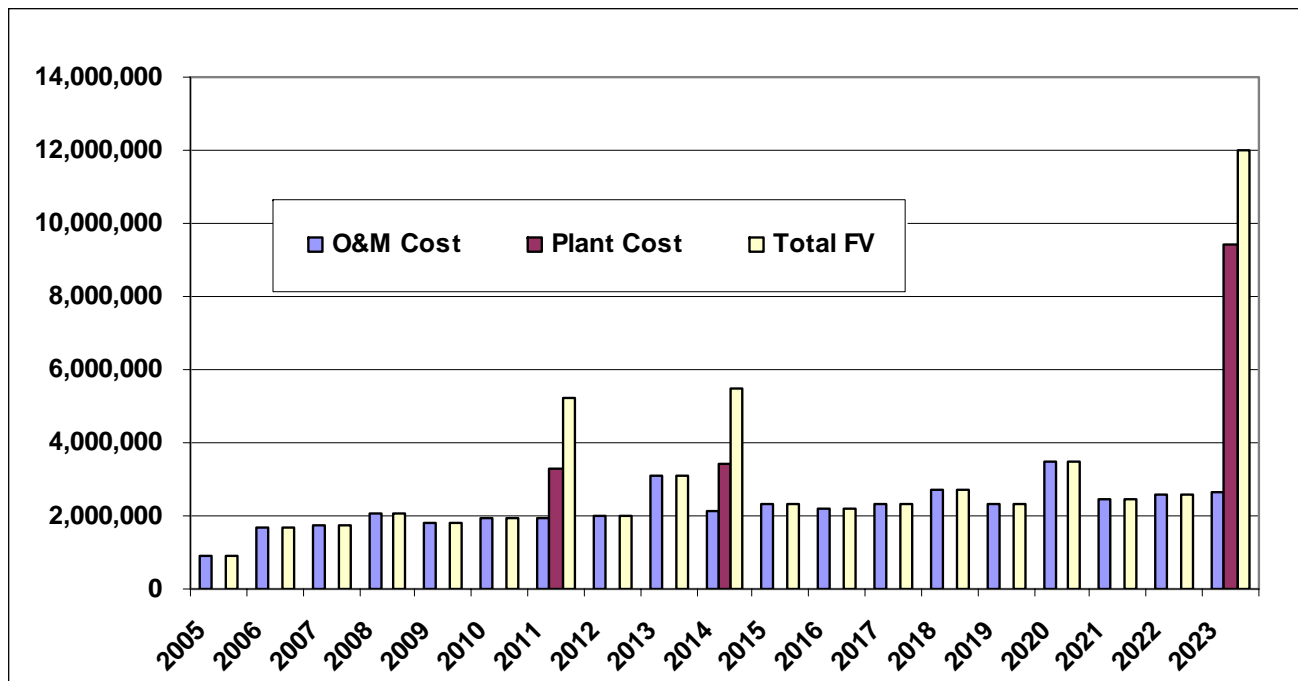
Cash Flow Matching Works When



- Future Value is known with certainty
- A zero-coupon investment is available, thereby eliminating reinvestment risk
- Cash is available to make the investment

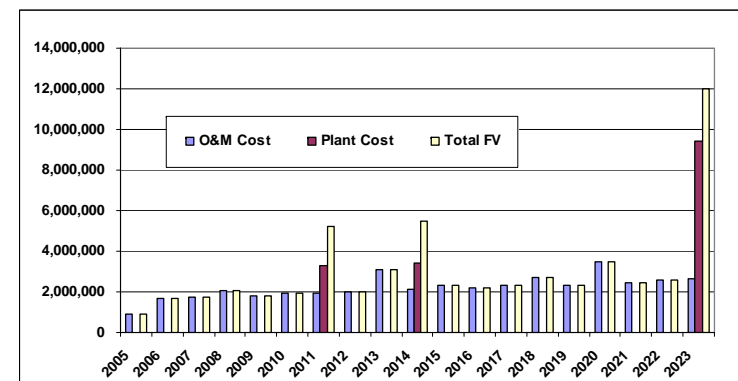
A/L Matching—Immunizing Multiple Liabilities

Liability Stream from a Superfund Settlement



Example: Superfund Settlement

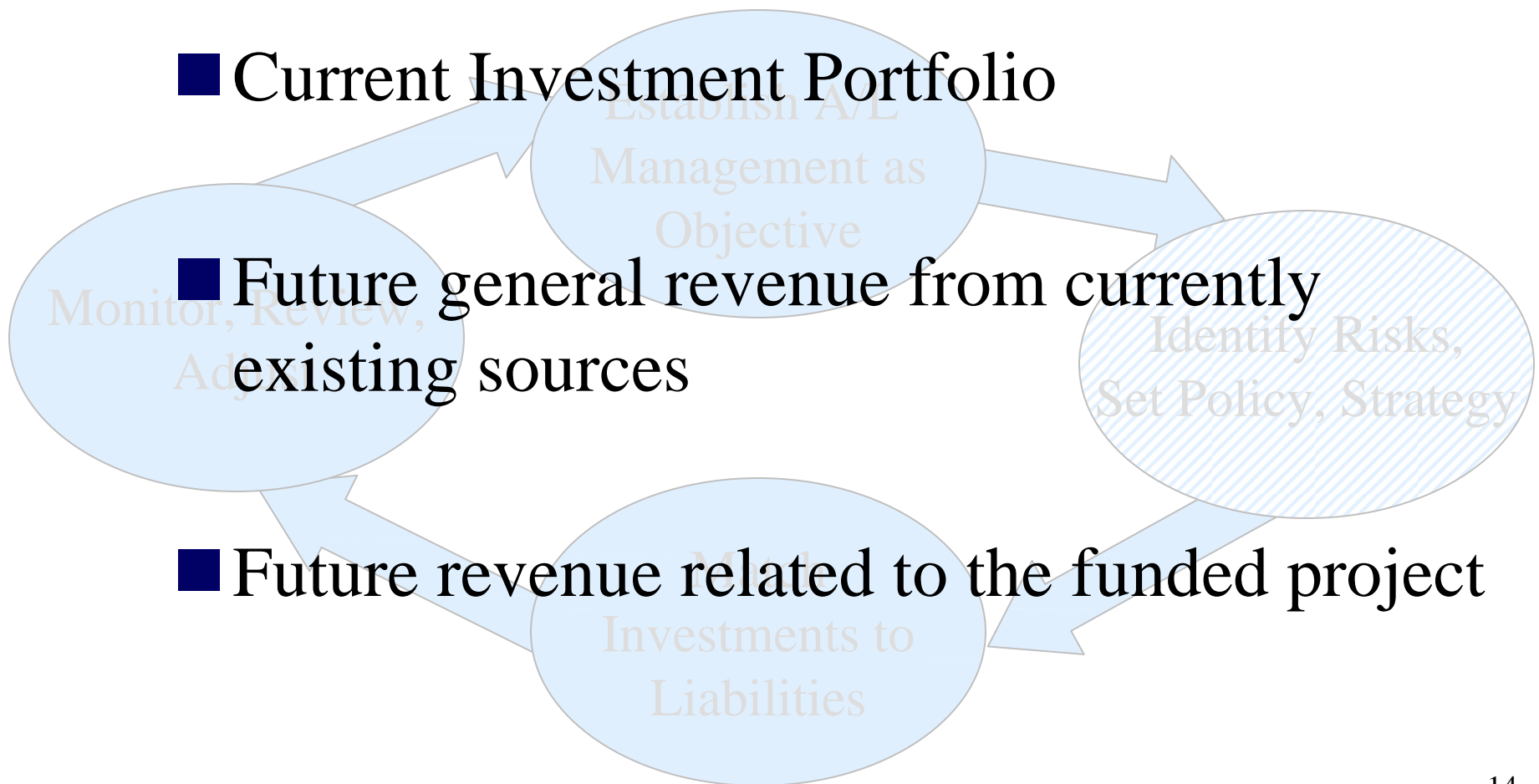
- Uncertainties abound
 - Two different liability streams—O/M and Construction
 - Inflation might affect each differently
 - Construction costs far in future
 - Reinvestment rate



Immunization Is Often More Efficient

- Cashflow matching can be expensive
 - And sometimes there are no suitable securities available to match the dates cashflow is needed
 - Furthermore, cashflows may not be certain
- So it is common practice to immunize by matching the *duration* of the investments to the *duration* of the liabilities

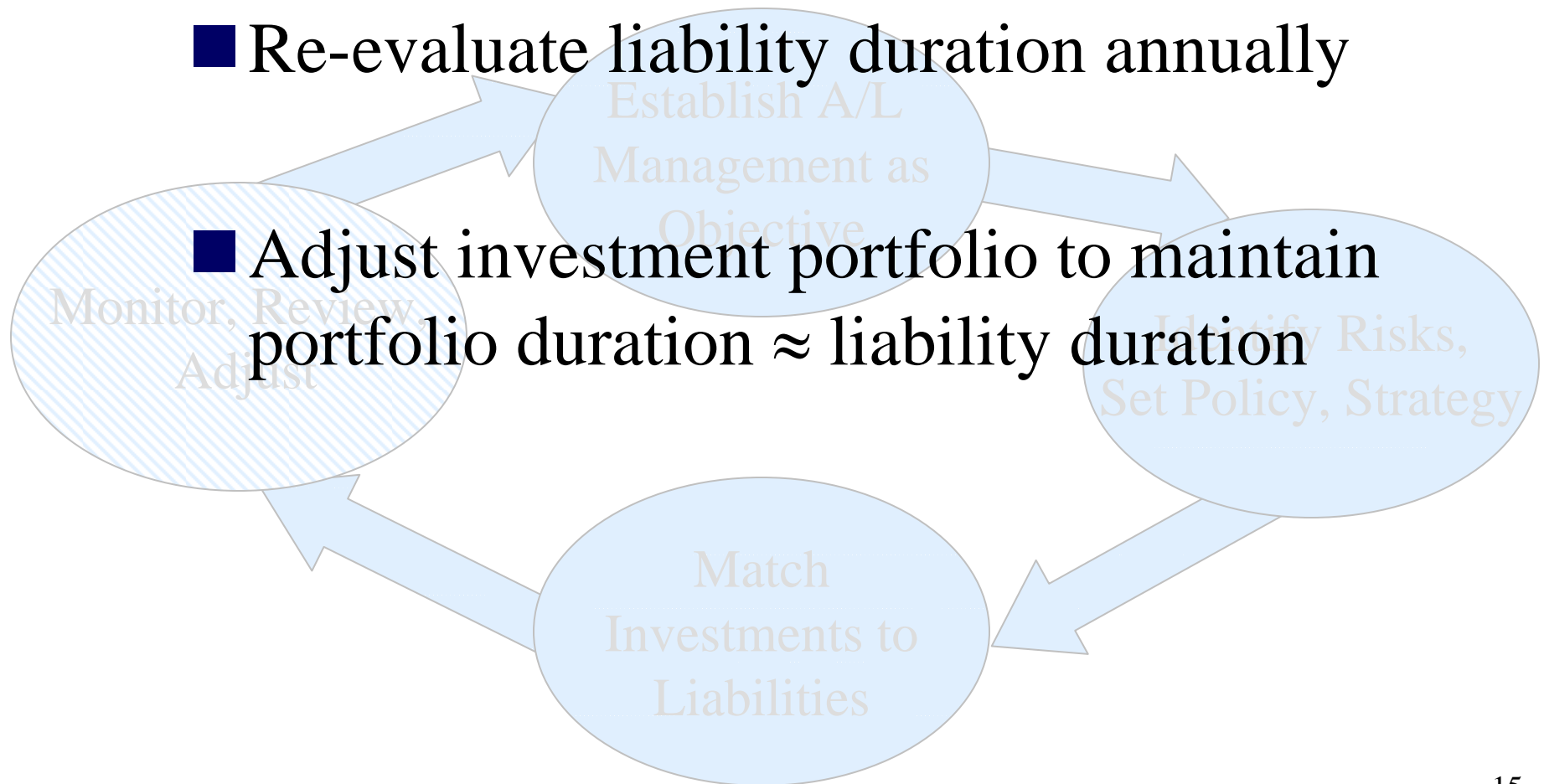
Strategy to Match Liability Duration



Portfolio Management in A/L Context

■ Re-evaluate liability duration annually

■ Adjust investment portfolio to maintain portfolio duration \approx liability duration

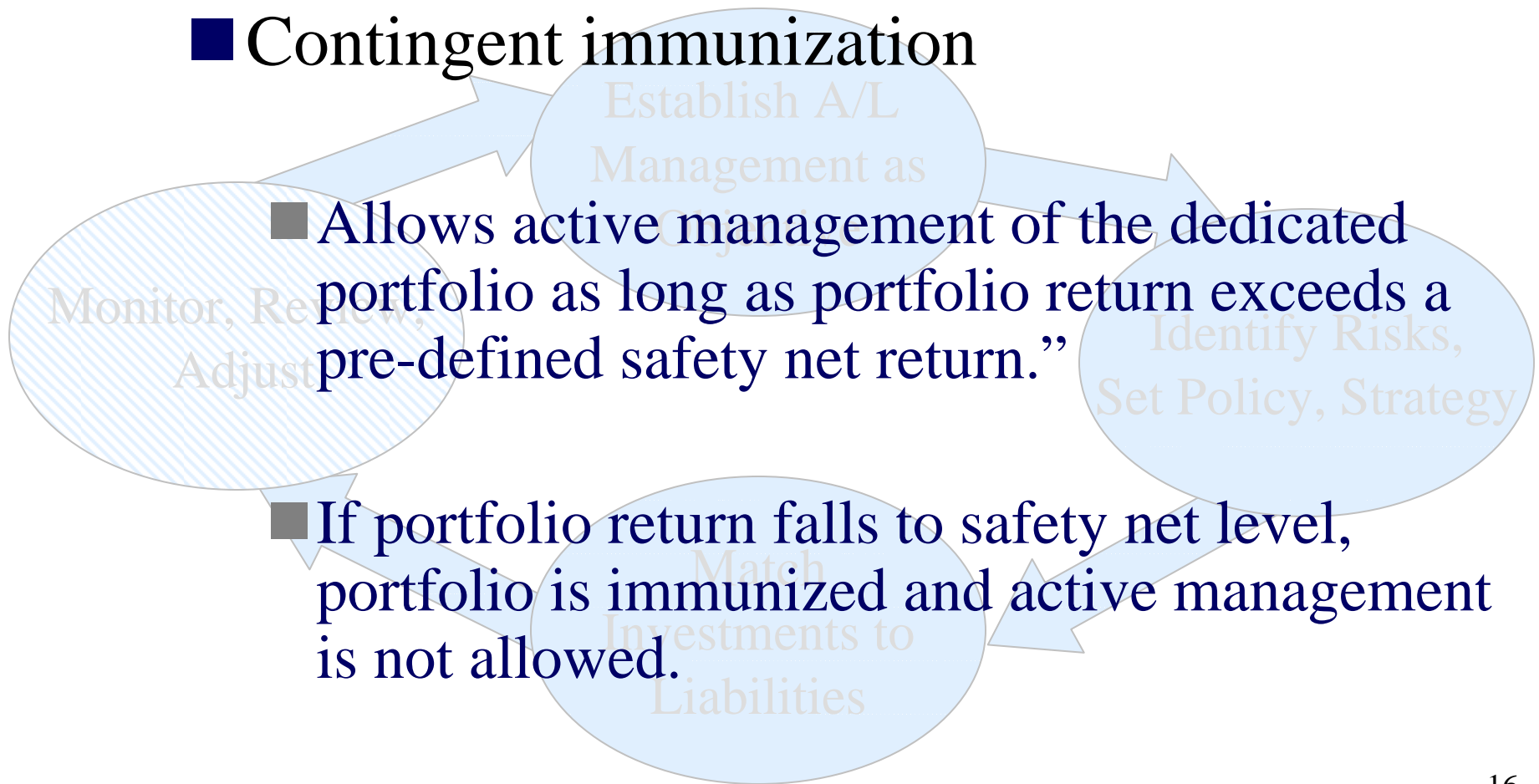


Portfolio Management in A/L Context

■ Contingent immunization

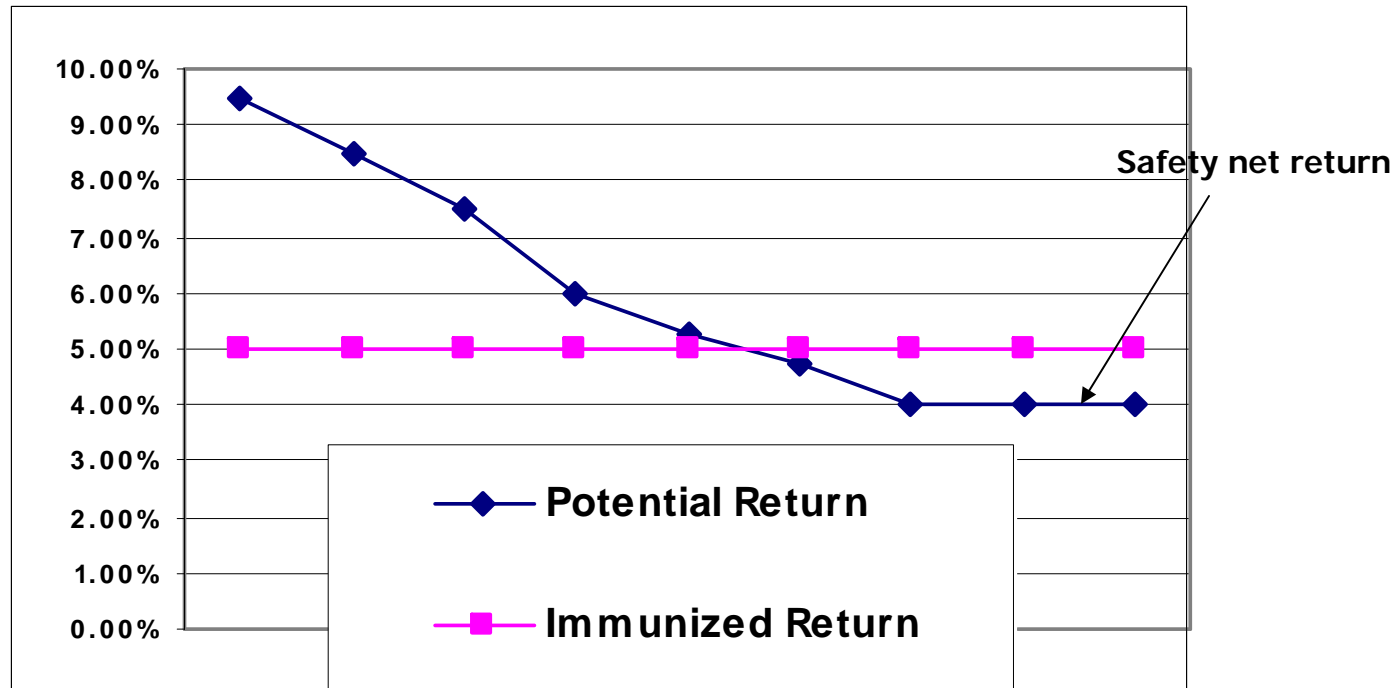
■ Allows active management of the dedicated portfolio as long as portfolio return exceeds a pre-defined safety net return.”

■ If portfolio return falls to safety net level, portfolio is immunized and active management is not allowed.



Portfolio Management in A/L Context

■ Contingent immunization



Portfolio Management in A/L Context

- Manage the portfolio for enhanced returns

- Manage portfolio duration to remain \approx liability duration
- Manage maturity/duration structure
- Manage sector allocation
- Individual security selection

- Monitor performance relative to market benchmarks

- Recognize that active management may work against the main objective of immunization—the elimination of risk

